fraction).The dose was calculated based on 3D CT-planning using Oncentra Master Plan and PLATO planning software. Dose volume constrains which were analyzed for target were: V100, V150, V200, D90. Patients were monitored weekly during radiotherapy and 1,3,6,9 and 15 months after the end of the treatment and then at three months interval. Follow-up visit included physical examination, images: ultrasound of abdomen and chest X ray and CEA value assessment. The acute toxicities were graded according to the EORTC/RTOG scales.

Results: Median follow up was 34,4 months (range 18-58). Three local recurrences were observed. One patient died of intercurrent disease 12 months after the implantation which was unrelated to the brachytherapy. Grade 1 and 2 rectal toxicity was reported in ten patients (66,7%). Four patients (26.6%) reported Grade 3 toxicity. One patient (6,7%) required hospitalization and surgical intervention. The most common rectal symptoms were pain, bleeding, thin stool, rectal urgency and frequency and acute proctitis. However no fatal toxicity was observed.

Conclusions: HDR brachytherapy is a valid anal sphincter sparing treatment modality to carefully selected patients and can be successfully used for salvage in patients with no other treatment options. The treatment was well tolerated by majority of patients with acceptable degree of acute toxicities. Overall survival data need longer follow-up.

Electronic Poster: Brachytherapy track: Miscellaneous

EP-1612

Intraluminal radiotherapy in the treatment of inoperable cancer of the esophagus

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Purpose/Objective: develop a method of intraluminal radiotherapy for esophageal cancer.

Materials and Methods: In RCRC 52 inoperable patients with esophageal cancer were treated with the use of 1 step method intraluminal radiotherapy esophagus. In 63.4% of patients - constrictive inoperable esophageal cancer, at 36.6% - a recurrence of esophageal cancer after treatment. Morphologically, the tumor shows squamous cell carcinoma (55.8%) and adenocarcinoma of varying degrees of differentiation (44.2%). In 84.6% of cases of marked dysphagia II-IV degree. Conducting topometricheskogo planning endovascular office allows you to set the Intrastat for the intraluminal radiotherapy in residual lumen of the esophagus to 1mm. Irradiation is performed with high activity sources Ir192. Dosing at 1 cm from the active line, the length of the active line 5-16sm. Treatment is carried out in 3 fractions with an interval of 6-7 days ROD = 7Gr SOD = 35games. In 96.2% of patients treated as outpatients conducted. After a 2-week break in 80.8% of cases to pursue further therapy: 52% rate teletherapy ROD = 2g = 80iGr to SOD, in 28.8% of cases in combination with chemotherapy. Follow-up of 4-26 months. In all cases observed treatment effect (tumor resorption in 23.1% - the complete destruction of the tumor, reducing the severity of dysphagia). Complications: 23.1% of the cases of different severity of esophagitis (docked conservative), 1.9% (1 patient) - esophago-tracheal fistula (setting 'covering' nitinol stent).

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Carrying on 1 stage esophageal intraluminal radiotherapy reduces the severity of dysphagia, which contributes to the correction of metabolic disorders and improve the overall condition, creates the possibility of external beam radiotherapy and chemotherapy in patients previously considered incurable, and consequently improves the results of treatment.

Conclusions: Intraluminal radiotherapy of the esophagus is a highly effective and safe treatment for patients with inoperable cancer of the esophagus, especially combines with dysphagia tumor genesis, significantly improving the quality of life and its duration in these patients.

EP-1613

Depth determination of skin cancers treated with superficial barchytherapy: ultrasound vs. histopathology

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Purpose/Objective: The purpose of this study is to compare high frequency ultrasonography (HFUS) and histpathologic assessment done by punch biopsy to determine depth of basal cell carcinoma (BCC), in both superficial and nodular BCCs prior to brachytherapy treatment.

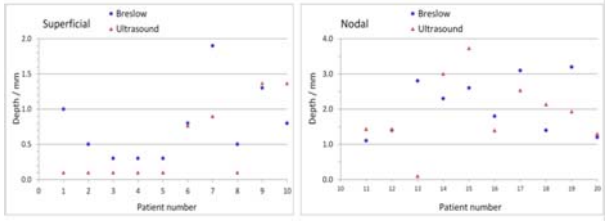
Materials and Methods: This study includes 20 patients with 10 superficial and 10 nodular BCCs. First, punch biopsy was done to confirm the diagnosis and to measure tumour depth (Breslow rate). Subsequently, HFUS was done to measure tumour depth to search for correlation of these two techniques.

Table 1. Clinical and histological characteristics.

Tumour	Sex	Age (years)	Histological subtype	Area (cm^2)	Location	HFUS (mm)	Breslow (mm)
1	Male	65	Superficial	3.1	Preauricular	0.1	1.0
2	Female	75	Nodular	1.5	Retroauricular	1.5	1.1
3	Male	69	Nodular	3.0	Forehead	1.3	1.4
4	Male	88	Nodular	3.1	Preauricular	0.1	2.8
5	Male	63	Superficial	3.8	Trunk	0.1	0.5
6	Female	51	Nodular	1.8	Glabellar	2.7	2.3
7	Male	72	Nodular	3.4	Cheek	3.7	2.6
8	Female	80	Nodular	0.75	Nose	1.3	1.9
9	Male	72	Superficial	2.5	Trunk	0.1	0.3
10	Female	55	Superficial	5.7	Trunk	0.1	0.3
11	Male	56	Superficial	5.0	Trunk	0.1	0.3
12	Male	67	Superficial	4.4	Cheek	0.1	0.8
13	Female	57	Nodular	0.75	Forehead	2.0	3.1
14	Male	67	Nodular	3.8	Forehead	1.6	1.4
15	Female	58	Nodular	2.2	Forehead	1.6	3.2
16	Female	66	Superficial	6.1	Trunk	0.1	1.9
17	Female	57	Superficial	6.2	Cheek	0.1	0.5
18	Male	82	Nodular	2.1	Forehead	1.3	1.2
19	Female	73	Superficial	3.1	Forehead	1.1	1.3
20	Female	81	Superficial	1.5	Forehead	1.3	0.9

Results: Neither clear tendency nor significance of the punch biopsy *vs*. HFUS depth determination is observed. Depth value differences with both modalities resulted patient dependent and then consequence of its uncertainty. Conceptually, HFUS should determine the macroscopic lesion (gross tumour volume or GTV) while punch biopsy is able to detect the microscopic extension (clinical target volume or CTV). Uncertainties of HFUS are difficult to address while punch biopsy is done just on a small lesion section, not necessarily the deepest one.

Figure 1



a) Histopathology (Breslow rate) vs. HFUS depth determination for the 10 patients evaluated with superficial BCC b) The same but with nodular BCC

Conclusions: According to the results, HFUS is less accurate at very shallow depths. Nodular cases present higher depth determination differences than superficial ones. In our clinical practice, we decided to prescribe at 3 mm depth when HFUS measurements give depth lesion values smaller than this value.

EP-1614

High dose-rate intraluminal brachytherapy as palliative treatment of malignant obstructive jaundice

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Purpose/Objective: Malignant obstructive jaundice (MOJ) due to extraepatic cholangiocarcinoma (ECC) is relieved by stenting via endoscopic retrograde cholangiopancreatography (ERCP) or percutaneous transhepatic cholangiography and biliary drainage (PTCD). Nevertheless, stent occlusion rates of 30-45% have been reported in literature due to tumour ingrowth or overgrowth. Brachytherapy seem to increase the patency of the stent. We retrospectively evaluated the feasibility of intraluminal brachytherapy (ILBT) and its role in preventing stent blockage.

Materials and Methods: All patients unsuitable for surgery or inoperable because of poor general conditions affected by ECC with MOJ receiving PTCD or ERCP followed by self expanding metallic stent (SEMS) placement were enrolled. The clinical chart were reviewed retrospectively. After the bilirubin level reduction, HDR-Ir192 ILBT was performed by delivering the dose prescribed at 1 cm from central axis of the catheter. ILBT regimen included fractional doses of 5Gy given over 4-5 consecutive days for a total dose of 20-25Gy. A 2D or 3D planning were expected . Stent patency duration was defined as duration between PTCD or ERCP procedures and detection of elevated bilirubin level (>50% of nadir value) after ILBT.

Results: From November 2005 to August 2014, 14 patients were treated. Only 1 patient underwent external beam radiotherapy (total dose of 45 Gy in 25 fractions) combined with chemotherapy (gemcitabine 300 mg / m2 / iv / week) followed by ILBT (10 Gy / 2 fractions/ 2 days), while the remaining patients received ILBT alone with palliative intent (5Gy for 4 or 5 fractions). Six patients had a histologically confirmed diagnosis of adenocarcinoma, while the remaining 8 patients had an instrumental diagnosis, nevertheless two consecutive biopsy of the tumour. Patient characteristics are as follows: 7 M and 7 F, median age at diagnosis 75 years (range 65-84), median performance status, assessed by the Karnofsky scale, 60% (range 50-90%). Twelve patients had Klatskin IV, 1 Klatskin IIIa and 1 Klatskin II. Main symptoms prior to brachytherapy were jaundice and abdominal pain, while, from a laboratory point of view, all patients had abnormalities of liver function tests typical of MOJ. All patients completed the scheduled treatment with mild acute toxicity; 3 patients developed cholangitis after ILBT, treated with antibiotic therapy. The stent remained patent until his death in 12 out of 14 patients (median 15.5 months, range 3-96). At a median follow-up of 18.5 months (3-96 months) 11 patients died due to disease progression, and only 3 are alive with stable disease.

Conclusions: Intraluminal brachytherapy post PTCD or ERCP self expanding metallic stent (SEMS) placement seems to be feasible and effective in preventing stent occlusion. Our purpose is to confirm these results in a larger series.